CLAIMS

1.   A method (200) for encoding video signal data for an image block, the method comprising:

5   receiving (212) a substantially uncompressed image block;

block matching (214) the image block in correspondence with at least one particular reference picture while excluding non-optimal search points in accordance with a comparison of a normalization of the image block pixels against a normalization of the reference picture pixels;

10   computing (216) motion vectors corresponding to a difference between the image block and the at least one particular reference picture; and

motion compensating (218) the at least one particular reference picture in correspondence with the motion vectors.

15   2.   A method (200) as defined in Claim 1 wherein computing motion vectors comprises:

testing within a search region for displacements within a pre-determined range of offsets relative to the image block while excluding non-optimal search points in accordance with a comparison of a normalization of the image block pixels against a

20   normalization of the reference picture pixels;

calculating at least one of a sum of the absolute difference, a sum of the square difference, and a mean squared error of each pixel in the image block with a motion compensated reference picture; and

selecting the offset with the lowest calculated sum of the absolute difference,

25   sum of the square difference, or mean squared error as the motion vector.

3.   A method (200) as defined in Claim 1 wherein block matching comprises:

storing a normalization of the current picture; and

30   reusing the stored normalization when the current picture is used as a reference picture for coding another picture.

4.   A method (200) as defined in Claim 1 wherein block matching comprises:

    storing a normalization of the smallest block size; and

    reusing the stored normalization for larger block sizes.

5.   A method for processing video signal data for an image block, the method comprising encoding (200) as defined in Claim 1 and decoding (300), the decoding comprising:

    receiving (312, 314) at least one reference picture index with the data for the image block, each corresponding to a particular reference picture;

    retrieving (318) a reference picture corresponding to each of the received at least one reference picture index; and

    motion compensating (320) the retrieved reference picture to form a motion compensated reference picture.

6.   A method (200, 300) as defined in Claim 5, further comprising adding the motion compensated reference picture to the data for the image block to predict the image block.

7.   A method (200, 300) as defined in Claim 6, further comprising storing the predicted image block as a reference picture for future retrieval.

8.   A method (200, 300) as defined in Claim 5 wherein the video signal data is streaming video signal data comprising block transform coefficients.

9.   A video CODEC comprising a video encoder (100) as defined in Claim 1 and a video decoder (400) for decoding video signal data for an image block and at least one particular reference picture index to predict the image block, the decoder comprising a motion compensator (460) having an output for determining a block corresponding to the particular reference picture index.

10.   A video CODEC (100, 400) as defined in Claim 9, further comprising a variable length decoder (410) in signal communication with the motion compensator (460) for providing the particular reference picture index to the motion compensator.

5   11.   A video CODEC (100, 400) as defined in Claim 9 wherein the motion compensator (460) is for providing motion compensated reference pictures responsive to the fast search block motion estimator (180).

12.   A video CODEC (100, 400) as defined in Claim 9 wherein the video
10   signal data is streaming video signal data comprising block transform coefficients.

13.   A video encoder (100) for encoding video signal data for an image block relative to at least one particular reference picture, the encoder comprising a fast search block motion estimator (180) for providing motion vectors corresponding to the
15   at least one particular reference picture, the motion estimator comprising a fast search block matching portion for performing fast search block matching while excluding non-optimal search points in accordance with a comparison of a normalization of the image block pixels against a normalization of the reference picture pixels, the fast search block matching portion having an output responsive to
20   the at least one particular reference picture.

14.   A video encoder (100) as defined in Claim 13 wherein the fast search block matching portion comprises at least one of a data reuse portion and a successive elimination portion.

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15.   A video encoder (100) as defined in Claim 13 wherein the fast search block matching portion comprises a data reuse portion adapted to store the normalization of the current picture and reuse the stored normalization when the current picture is used as a reference picture for coding another picture.

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16.   A video encoder (100) as defined in Claim 13 wherein the fast search block matching portion comprises a data reuse portion adapted to store the normalization of the smallest block size and reuse the stored normalization for larger

5   block sizes.

17.   A video encoder (100) as defined in Claim 13 wherein the fast search block matching portion comprises at least one of a sum of the absolute difference calculator, a sum of the square difference calculator, and a mean squared error

10   calculator for performing normalization.

18.   A video encoder (100) as defined in Claim 13, further comprising a reference picture store (170) in signal communication with the fast search block motion estimator (180) for providing the at least one particular reference picture and a

15   corresponding particular reference picture index.

19.   A video encoder (100) as defined in Claim 18, further comprising a variable length coder (140) in signal communication with the reference picture store (170) for encoding the particular reference picture index corresponding to.the at least   ·

20   one particular reference picture. ·

20.   A video encoder (100) as defined in Claim 13, further comprising a motion compensator (190) in signal communication with the fast search block motion estimator (180) for providing motion compensated reference pictures responsive to

25   the fast search block motion estimator.